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TRANSDERMAL NITROGLYCERIN: A NOVEL, EFFECTIVE AND NON-INVASIVE METHOD OF AVOIDING RADIAL ARTERY SPASM DURING CARDIAC CATHETERIZATION; A RANDOMIZED PROSPECTIVE TRIAL

Poster Contributions
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Background: Coronary arteriography via radial cannulation has gained popularity and demonstrated efficacy compared with the standard femoral approach. Transradial cardiac cauterization allows for reduced rates of bleeding, prompt ambulation, lower cost of hospitalization, more comfort, and early discharge. However, radial artery spasm (RAS) is a caveat physicians have to confront. The standard anti-spastic therapy consists of either intra-arterial (IA) nitroglycerin (NTG) or verapamil or both. The rate of RAS has been shown to be 10-20% without anti-vasospasmotics and 5-7% with. In this study, we aim to test topical NTG as an anti-vasospastic agent vs. IA NTG. Our goal was to demonstrate non-inferiority to avoid spasm, less pain, cost savings and added convenience to the operator.

Methods: We randomized a total of 50 consecutive patients admitted for coronary angiography using the radial approach to either receive 0.2 mg/hr topical NTG or IA NTG (25 in each arm of the study). Palm arch circulation was examined using the Barbeau's test. Patients included in this study had to have a favorable Barbeau's test and an ACC guideline based indication for cardiac catheterization. Major exclusion criteria were an unfavorable Barbeau's test, cardiogenic shock or an acute ST elevation MI.

Results: The two major outcomes measured were RAS grade and pain score based on the following definitions. Spasm Grade of 0-3; 0=normal manipulation of catheters, 1=slight resistance, 2=difficult manipulation and 3=halting of procedure. A standard 0-10 pain scale was used with 0 denoting no pain and 10 being severe pain. Average RAS grade in topical NTG arm was 0.12 vs 0.44 in the IA arm with a p value of .041. Average pain score in the topical NTG arm was 0.56 vs. 2.20 in the IA arm with a p value of .065 (NS).

Conclusion: Based on our results, we have demonstrated that transdermal NTG is not only as effective as IA but is associated with less pain and spasm. We feel these results are multi-faceted, IA nitro is short acting, tends to be an arterial irritant causing short lived pain that may cause secondary spasm. Furthermore, without IA NTG the procedure is less cumbersome, there is a modest cost savings and operators find it more convenient.